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WHAT IS THE BEST ACCOUNTING POLICY FOR GAINS AND LOSSES IN PENSIONS?

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Abstract

The importance of this research is emphasized by the changes in IAS 19 proposed by the IASB in 2010. In this context, the primary objective of our analysis is to provide a comparison between the three allowed methods to account for the recognition of actuarial gains and losses, taking into consideration their value relevance for the investor, within defined benefit plans accounting. Our results provide evidence that full recognition of actuarial gains and losses in equity is more value relevant to investors than full recognition in the income statement, and than the recognized smoothed net pension liability through the corridor approach.

Keywords: IAS 19, actuarial gains and losses, corridor, defined benefit plans.

1. Introduction

The complexity of defined benefit plans accounting, given the existence of several methods for recognition of actuarial gains and losses in pensions under the International Accounting Standard (IAS) 19 *Employee benefits* in Europe and FAS 87 *Employers' Accounting for Pensions* in the U.S., is a major issue to investors, standard setters and stakeholders in general and it provides the underlying incentive for the present study.

Investors have been raising complaints regarding both the accuracy and comparability of financial statements, to what concerns pension recognized and disclosed amounts. Therefore, while the vast majority of IAS 19 companies decided to use the corridor approach, since it leads to smoothing and reduction in income statement and balance sheet volatility (Fasshauer et al., 2008), financial analysts instead have a strong preference for the adoption of full recognition of actuarial gains and losses (e.g., Credit Suisse First Boston, 2005; JP Morgan, 2006; UBS, 2006).

The first motivation to this study relates to whether the amendments to IAS 19 (IASB, 2008; IASB, 2010), which are expected to be issued in the second quarter of 2011 by the International Accounting Standards Board (IASB) and to be effective for 2013 fiscal years, will eliminate the current option of the "corridor" method, requiring an immediate recognition in total comprehensive income of changes in the value of plan assets and obligations for the fiscal year.

Although most European firms used to apply domestic accounting standards, the year of 2005 entailed the mandatory adoption of International Financial Reporting Standards (IFRS) for listed companies, representing a major change in the way they account for pension plans, and especially for defined benefit plans. Following IAS 19 (IASB, 2004),

companies with defined benefit plans are permitted to choose between three methods to account for the recognition of actuarial gains and losses: the "corridor" method, the profit and loss (P&L) method (full recognition through P&L) and the equity method (full recognition through the statement of recognized income and expense).

Therefore, in this context, a primary objective of our analysis is to provide a comparison between the three allowed methods to account for the recognition of actuarial gains and losses, taking into consideration their value relevance for the investor, within defined benefit plans accounting. Barth (2001), Hann et al. (2007) and Landsman (2007) refer to the concept of value relevance of accounting information used by investors as the incremental effect on stock prices or returns of a recognized or disclosed accounting amount, after controlling for other accounting or market information.

The introduction of the mentioned amendments to IAS 19, will also have an impact on Portuguese unlisted companies with defined benefit plans that now have to comply with the IAS/IFRS accounting standards published in Portugal, for the periods beginning in the January, 1st of 2010. This fact constitutes another motivation in this study to understand the value relevance of each of the methods currently allowed by IAS 19, by including Portuguese companies on the sample data.

Furthermore, our second main motivation to perform this study, using European companies, relates to the fact that most previous research on defined benefit plans accounting and on value relevance are U.S. based (e.g. Landsman, 1986; Barth et al., 1993; Coronado and Sharpe, 2003; Hann et al., 2007). These studies compared the value relevance of the information on net pension obligations from the balance sheet and

pension costs from the income statement, reaching contradictory conclusions given their contingency on the utilized data set.

As its main contribution, our research extends previous literature by performing regression analysis, using empirical versions of the Ohlson-model (Ohlson, 1995; Feltham and Ohlson, 1995), in order to capture the effect of each accounting method in European companies with defined benefit plans, quoted in the PSI General Index (Euronext Lisbon) and in the Euronext 100 Index, for the period 2005 to 2009.

Our results provide evidence in favor of the equity method as the best recognition policy for actuarial gains and losses in defined benefit plans.

This study is organized as follows. After the introduction, section 2 includes a brief review of the existing literature. Section 3 presents the research design. A description of the data used on our analysis and its main properties is presented in Section 4. A discussion of the empirical results is outlined in section 5. The last section gives the concluding remarks.

2. Literature review

2.1. Institutional background

According with IAS 19 Employee benefits, companies can provide their employees with a variety of post-employment benefit plans, which can be classified as either defined contribution or defined benefit plans, depending on the economic substance of the plan as resultant from its main terms and conditions. The main difference between the two is who bears the actuarial and investment risks regarding the plans (the employer or employee).

Under defined contribution plans, a company pays fixed contributions into a separate fund and has no legal or constructive obligation to pay further contributions if the fund does not hold sufficient assets to pay benefits. Contributions are immediately recognized as an expense in the income statement in the period to which they relate, thus there is no possibility of any actuarial gain or loss, since there are no actuarial assumptions involved in the calculation of the obligation.

For defined benefit plans IAS 19 requires companies to recognize the expenditure relating to these obligations on an accrual basis over the working life of the employees by performing at the balance sheet date the appropriate actuarial studies calculated using the projected unit credit method. This method sees each period of service as giving rise to an additional unit of benefit entitlement and measures each unit separately to build up the final liability. The defined benefit obligation (DBO) is generally funded by plan assets, with any unfunded portion recognized as a liability in the balance sheet.

Pension and other retirement benefit obligations recognized on the balance sheet represent the discounted present value of the defined benefit obligation less the fair value of plan assets, adjusted by the actuarial profit and loss not recognized and the cost of past services. Any surpluses, corresponding to the excess of the fair value of plan assets over the projected benefit obligation, are recognized only when they represent the present value of any economic benefits available in the form of refunds from the plan or reductions in future contributions to the plan. The amount recognized for such an asset cannot exceed the net total amount of: cumulative net unrecognized actuarial losses and unrecognized past service cost, and the present value of all future reimbursements to be made by the plan or decreases in future contributions to be made to the plan.

Actuarial gains and losses arising from changes in actuarial assumptions and experience adjustments for post-employment benefits are either: 1) recognized immediately in equity in accordance with the option offered by the amendment to IAS 19 published by the IASB in 2004 and endorsed by the European Union (EU) on November 8, 2005; 2) charged or credited to income when they arise; 3) amortized through the income statement over the expected average remaining working lives of employees entitled to the plan's benefits, by the fraction of net cumulative unrecognized actuarial gains and losses in excess of 10% of the greater of: 1) the present value of the obligation under the defined benefit plan and 2) the fair value of the plan's assets (corridor method).

The existence of these three recognition methods leads to different impacts in the financial statements, thus increasing the complexity, lack of transparency and comparability among companies that follow different methods.

This issue is currently being addressed by the IASB, in the scope of the "defined benefit plan" project included in the IASB's agenda since July 2006, which constitutes part of the FASB and the IASB's work programme towards convergence. As stated by IASB in its online page dedicated to standards development, the main goal of this project is "*to make fundamental improvements to the recognition, presentation and disclosures of defined benefit plans by mid-2011. These improvements will make it easier for users of financial statements to understand how defined benefit plans affect an entity's financial position, financial performance and cash flows*".

The proposed amendments, included in IASB (2010), consist on: 1) the abolishment of all methods that allow deferring the recognition of part of the estimated changes in the cost of defined benefit plans (including actuarial gains and losses) and in the value of

the plan assets, in favor of immediate recognition; 2) a new separate presentation of changes in benefit costs (e.g., interest costs would be presented as finance costs instead of being included on personnel costs); 3) an improvement in the disclosures referring to the characteristics, amounts and risks associated with the defined benefit plans.

The current salience of this question among standard setters and investors in general motivated the present study, which aims to contribute to the debate by answering the question of what recognition method for actuarial gains and losses is more value relevant to investors.

2.2. Prior research

Pension plan defined benefit obligations can be a considerable percentage of the liabilities that an exchanged listed company has on its balance sheet and subsequently can have an impact on the company financial results (Severinson, 2008).

A variety of papers, over the last twenty years, has been dedicated to the accounting of defined benefit plans and their value relevance, such as Barth et al. (1993), Coronado and Sharpe (2003), Wiedman and Wier (2004), Hann et al. (2007) and Kiosse et al. (2007), Coronado et al. (2008) related to US based accounting research, and Fasshauer et al. (2008), Fasshauer and Glaum (2009), Street and Glaum (2010) and Morais (2011), related to Europe. Additionally, Barth et al. (2001) examined the relevance of the value relevance literature for financial accounting standard setting and concludes that fruitful insights for standard setting are provided by the value relevance literature.

Barth et al. (1993) found that, for a sample from 1987 to 1990 and 300 U.S. companies, when the projected-benefit obligation and the fair value of pension assets are included in a regression in order to explain the market value of equity, the value of the pension

expense loses explanatory power. In contrast, Coronado and Sharpe (2003), using a sample from 1993 to 2001 of U.S. companies from the S&P index, found that the market appeared to pay more attention to the pension cost accruals reported in the income statement than to the fair value of the pension assets and liabilities released in the footnotes. Coronado et al. (2008) extended the previous study to the years 2002 to 2005 and achieved the same conclusions. These last results might be explained by investors' earnings fixation during bull markets.

Wiedman and Wier (2004) and Kiosse et al. (2007), in the context of the underfunding experienced by several defined pension plans in recent years, analyzed the potentially different valuation effects associated with underfunded vs. overfunded pension plans and concluded that pension expense is more value relevant for companies with underfunded pension plans.

The study by Hann et al. (2007) compares the value and credit relevance of financial statements measured alternatively by the current smoothing model (consistent with SFAS-87) and a fair value model. The results appear to suggest that no informational benefits are taken by adopting the fair value pension accounting model.

Fasshauer and Glaum (2009) examined the value relevance of fair value estimates of pension obligations using a sample of companies from the German Stock Exchange, from 1999 to 2006. The authors have used regression analysis on panel data. Fasshauer and Glaum (2009) found that financial-position related pension accounting variables have a stronger explanatory power than pension expenses regarding the market value of equity and also found some evidence that the fair value funding status has a stronger

explanatory power than the smoothed recognized pension liability regarding the market value of equity.

The work by Street and Glaum (2010) extends the analysis by Fasshauer et al. (2008) which found that from a sample of companies constituting Europe's 20 premier stock market indices, with defined benefit plans, for the year 2005, 265 used the "corridor" method, 7 the P&L method and 122 utilized the equity method. The results from Street and Glaum (2010) showed that the use of IAS 19 full recognition methods has increased in European companies since 2005, although the use of the "corridor" method remains relatively widespread. Both studies support the IASBS's proposal to eliminate the "corridor" method and require the full recognition of actuarial gains and losses.

Morais (2011) investigated which of the three methods of accounting for actuarial gains and losses, under the IAS 19, provided more value relevant information, for a sample of 91 companies included in EURONEXT 100, for the period 2005-2007. The author estimated cross-sectional valuation equations for each of the years as well as pooled regressions using year-fixed effects. The equity recognition method appeared to be the method providing more value relevance.

3. Research design

The central research question addressed in this study is "What is the best accounting policy for actuarial gains and losses in defined benefit plans?"

In order to access and compare the value relevance of each method for recognition of actuarial gains and losses, this study follows prior literature (Barth et al., 1993; Coronado and Sharpe, 2003; Hann et al., 2007; Kiosse et al., 2007; Fasshauer and

Glaum, 2009), by regressing market values of equity on pension and non-pension accounting information through the application of empirical variations of the Ohlson Model (Ohlson, 1995; Feltham and Ohlson, 1995).

Model 1: $P_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 NI_{it} + \varepsilon_{it}$ (1)

Where subscripts *i* and *t* identify respectively firm and year.

Model 1 is the usual benchmark model including only *BVE*, book value of equity, and *NI*, net income (*p* is the share price), and was used as starting point to defining the following extended models, which will allow us to test the questions of interest in our research.

Recognition of actuarial gains and losses: P&L vs. equity vs. corridor

Using a different approach than previous research (e.g., Morais, 2011), in the following models (2a) and (2b) the objective is to access the incremental value relevance of the equity method and profit and loss method, compared with the corridor.

Model 2a: $P_{it} = \beta_0 + \delta_0 Method_E + \delta_1 Method_{P\&L} + \beta_1 BVE_{it} + \beta_2 NI_{it} + \varepsilon_{it}$ (2a)

Model 2b: $P_{it} = \beta_0 + \delta_0 Method_E + \delta_1 Method_C + \beta_1 BVE_{it} + \beta_2 NI_{it} + \varepsilon_{it}$ (2b)

We address our main research question in models (2a) and (2b), using an extension of model (1) by introducing two dummy variables: $Method_E$, which is set to 1 for a firm using the equity recognition method for actuarial gains and losses, and 0 otherwise; $Method_{P\&L}$, which is set to 1 for a firm using the P&L method of recognition and 0 otherwise; and $Method_C$, which assumes 1 for a firm using the corridor method for

recognition of actuarial gains and losses, and 0 otherwise. The coefficient estimates on the two dummy variables in model (2a) measure the proportionate difference in share prices relative to the corridor method, while in model (2b) the coefficient estimates on the two dummy variables measure the proportionate difference in share prices relative to the profit and loss method.

In line with previous research conducted on European firms (e.g., Street and Glaum, 2010; and Morais, 2011), which provide evidence supporting IASB's proposal to eliminate the corridor approach, we expect to find evidence that full recognition of actuarial gains and losses is more value relevant than the deferring alternative, the "corridor" approach. Thus, our first hypothesis is:

H-1: *Full recognition of actuarial gains and losses through P&L or equity methods, provides more value relevant information than the corridor approach.*

Additionally, we expect to find evidence that the equity method provides more value relevant information for the investors, than the other two recognition methods, as supported by Morais (2011). Thus our second hypothesis is the following:

H-2: *Full recognition of actuarial gains and losses in equity provides more value relevant information than the recognition on P&L or using the corridor method.*

Therefore, we expect both δ_0 and δ_1 coefficients statistically significant. Additionally, we tested the equality of these coefficients using the Wald test, in order to find if investors value differently the equity, P&L and corridor methods.

Recognized fair value pension estimates vs. smoothed net pension liability

A further question of interest is to find out which balance sheet related information is more strongly related with stock prices, if the funding status of the plan (the DBO minus fair value of plan assets) or the recognized net pension liability. Fasshauer and Glaum (2009) addressed this question for German companies by using the following variations of the Ohlson Model:

Model 3: $P_{it} = \beta_0 + \beta_1 BVEbO_{it} + \beta_2 NI_{it} + \beta_3 O_{it} + \varepsilon_{it}$ (3)

Model 4: $P_{it} = \beta_0 + \beta_1 BVEbP_{it} + \beta_2 NI_{it} + \beta_3 FS_{it} + \varepsilon_{it}$ (4)

Where, *BVEbO* is the book value of equity before net pensions liability, *O* is the recognized net pensions liability, *BVEbP* is the book value of equity before funding status, and *FS* is the funding status.

Thus, our third hypothesis is the following:

H-3: *The fair value estimated funding status provides more relevant information to investors than the recognized smoothed net pension liability.*

At the same time, we are also interested in understanding, weather pension amounts which are not recognized in the income statement due to smoothing (mostly attributable to the corridor method) are more value relevant than the net pension liability, by using two different variations of model (1):

Model 5: $P_{it} = \beta_0 + \beta_1 BVEbP_{it} + \beta_2 NI_{it} + \beta_3 DBO_{it} + \beta_4 PA_{it} + \varepsilon_{it}$ (5)

Model 6: $P_{it} = \beta_0 + \beta_1 BVEbP_{it} + \beta_2 NI_{it} + \beta_3 O_{it} + \beta_4 UA_{it} + \varepsilon_{it}$ (6)

Where, *DBO* is the defined benefit obligation, *PA* is the fair value of plan assets and *UA* are the unrecognized pension amounts in the income statement.

We expect coefficients on *BVEbP*, *NI* and *PA* to be positive and statistically significant, while the coefficient estimates on *FS*, *O* and *DBO* are expected to be negative and statistically significant. Regarding *UA*, since this value can be either expressed as a net gain or loss, the expected sign is uncertain. Thus, our fourth hypothesis is the following:

H-4: *The unrecognized pension amounts provide more value relevant information to the investor than the recognized net pensions liability.*

All our models use panel data for the regression analysis. In order to control for eventual cross-sectional effects we include cross-sectional indicator variables (not tabulated). Moreover, with the purpose of obtaining standard errors of OLS estimators that are robust to heteroskedasticity we follow White's (1980) approach. A description of the variables used in the regression estimation is given on section 4.1. in this study.

4. Sample data

Our empirical analysis is based on hand-collected pension accounting and market data, for a sample of companies from the PSI General Index (constituents are traded on the Euronext Lisbon) and for the Euronext 100 Index, for the years 2005 to 2009. The Euronext 100 Index is the blue chip index of the pan-European exchange, Euronext NV, and includes companies from France, Netherlands, Belgium, Portugal and Luxembourg. All the companies used in this study have defined benefit plans, disclose information about the method of recognizing actuarial gains and losses, adopted the IAS 19 and have fiscal year ending 31st December. Companies with no data available for all

the variables were excluded were excluded from the original sample. Moreover, outliers were removed from the sample data in order to avoid biases in the regression estimation.

4.1. Data description

The accounting data and the number of shares outstanding during the period, used in this research, were hand-collected from the annual reports of the sample companies. Additionally, company closing share prices adjusted for dividends and splits, for each year end, were collected from Yahoo Finance[1]. All accounting variables were divided by the number of shares outstanding at year end in order to minimize potential scale effects across the sample of companies (e.g., Easton and Sommers, 2003).

The selection process resulted on a final sample of 58 companies for each of the 5 years of data (2005-2009) which is reported in Table 1. From these total number of companies with defined benefit plans, 26 use the "corridor" method, 29 use the equity method and only 3 use the P&L method to recognize actuarial gains and losses. Our total sample is made up of 255 firm-years.

Table 1: **Number of Companies included in Sample by recognition method (as of 2009)**

Index	Countries	Companies included in Index	Total companies removed	total companies remaining and with defined benefit plans	no. companies using "corridor" method	no. companies using P&L method	no. companies using Equity method
Euronext 100	France	61	30	31	13	0	18
Euronext 100	Netherlands	17	5	12	8	0	4
Euronext 100	Belgium	11	8	3	2	0	1
Euronext 100	Luxembourg	2	2	0	0	0	0
Euronext 100	Portugal	9	9	0	0	0	0
PSI General	Portugal	54	42	12	3	3	6
TOTAL		**154**	**96**	**58**	**26**	**3**	**29**

[1] Yahoo Finance, http://finance.yahoo.com/

From 2005 to 2009 there was an increase in the use of the equity method from a reduction of the "corridor" method (not tabulated). In our sample the number of companies using the corridor method decreased from 64% (37 companies, in 2005) to 45% (26 companies, in 2009) while the equity method increased from 31% (18 companies, in 2005) to 50% (29 companies in 2009), and the P&L method remained constant at 5% (3 companies). These results are in line with Street (2010) and Morais (2011) and illustrate that companies are changing their recognition methods from the "corridor" method to the equity method.

4.2. Descriptive statistics

Table 2 (see appendix) provides descriptive statistics on pension accounting information and share prices for our sample, and a summary description of the variables used in the regression estimation. The data is presented per-share as it is used in this way in our regression analysis.

5. Empirical results

The results for estimations of model (1) to (6) are presented on Table 3 (see appendix). These models explain approximately 80% of the cross-sectional variance in share prices, which is a higher value than those presented in previous literature (eg., Fasshauer and Glaum, 2009; Hann et al., 2007; Kiosse et al., 2007).

As previously expected, the coefficients for net income are positive and highly statistically significant in all models presented. The book value of equity is equally positive and highly statistically significant in model (1), (2a) and (2b). The coefficient terms for *O*, *FS* and *DBO* are negative while the coefficient for *PA* is positive, being all

statistically significant, as expected. The variables *BVEbP*, in models (5) and (6), and *UA* in model (6) appear not to be statistically significant at 10%.

Recognition of actuarial gains and losses: P&L vs. equity vs. corridor

H-1: *Full recognition of actuarial gains and losses through P&L or equity methods, provides more value relevant information than the corridor approach.*

H-2: *Full recognition of actuarial gains and losses in equity provides more value relevant information than the recognition on P&L or using the corridor method.*

In order to test H-1, we used an equivalent model to (2a) and (2b), not tabulated, just changing the dummy variables into $Method_{P\&L}$ and $Method_{C}$, and defining the equity method as the base group. The p-value (0.001) associated with the Wald test coefficient comparison leads to strongly reject that the coefficients are equal. Regarding the comparison of the absolute values of the coefficients of $Method_{P\&L}$ and $Method_{C}$ (5.512 vs. 5.413), we conclude that the full recognition of actuarial gains and losses in the income statement is somewhat more strongly associated with share prices than recognition under the corridor approach.

H-1 and H-2 were addressed by testing the equality of coefficients δ_0 and δ_1 from models (2a) and (2b) using the Wald test, in order to find if investors value differently the equity, the P&L and the corridor recognition methods for actuarial gains and losses.

In model (2b), the p-value (0.014) associated with the Wald test coefficient comparison leads to the rejection, at 5% significance level, that the coefficients of $Method_{E}$ and $Method_{C}$ are equal. Moreover, by comparing the absolute values of δ_0 and δ_1 (-5.512

vs. -0.099) in model (2b), we conclude that the full recognition of actuarial gains and losses in equity is more strongly associated with share prices than recognition under the corridor approach.

Both results derived above, provide statistical evidence in favor of H-1. Therefore, we do not reject H-1, concluding that full recognition of actuarial gains and losses through P&L or equity methods, provides more value relevant information than the corridor approach.

Regarding H-2, in model (2a), the p-value (0.012) associated with the Wald test coefficient comparison leads to the rejection, at 5% significance level, that the coefficients of $Method_E$ and $Method_{P\&L}$ are equal. Additionally, by comparing the absolute values of δ_0 and δ_1 (-5.413 vs. 0.099) in model (2a), we conclude that full recognition of actuarial gains and losses in equity is more strongly associated with share prices than full recognition in the income statement.

Both results derived from models (2a) and (2b) provide evidence in favor of the equity method as the best recognition policy for actuarial gains and losses in defined benefit plans. Therefore, we do not reject H-2.

Recognized fair value pension estimates vs. smoothed net pension liability

H-3: *The fair value estimated funding status provides more relevant information to investors than the recognized smoothed net pension liability.*

In order to test for ***H-3***, both the adjusted R-squared of Models (3) and (4) and the coefficient estimates for *O* and *FS* were respectively compared. We concluded that

model (3), which includes the net pensions liability, has to some extent a stronger explanatory power than model (4) ($R^2_{(3)}$=0,960 vs. $R^2_{(4)}$=0,919), and the coefficient on the net obligation in (3) is greater in absolute terms than the coefficient of the funding status in (4) (-1.428 vs. -0.885). Conversely to Fasshauer and Glaum (2009), we find evidence of a stronger association of the recognized net pension liability with stock prices, than with the funding status. Therefore, we reject H-3 for our sample of European firms.

H-4: *The unrecognized pension amounts provide more value relevant information to the investor than the recognized net pensions liability.*

Regarding H-4, we have analyzed the coefficient of *UA* in model (6), which appears not to be significant at 10% significance level. Additionally, the equality of the coefficients of *O* and *UA* was tested using the Wald test, in order to find if investors value differently unrecognized amounts and net pension obligations. The p-value (0.097) associated with the Wald test coefficient comparison leads to the rejection, at 10% significance level, that the coefficients of *O* and *UA* are equal. However, by comparing the absolute values of the coefficients, we conclude that the net pension liability is more strongly associated with stock prices, than unrecognized pension amounts in the income statement (-1.421 vs. 0.264), which leads us to reject H-4.

6. Conclusions

The main purpose of this study is to access the value relevance for investors of the information provided by the three different recognition methods, allowed in IAS 19, for actuarial gains and losses in defined benefit plans, based on a sample of European listed companies.

The importance of this research is emphasized by the changes in IAS 19 proposed by the IASB. The amendments to IAS 19 are expected to be issued in the second quarter of 2011 by the International Accounting Standards Board (IASB) and to be effective for 2013 fiscal years, will eliminate the current option of the "corridor" method, requiring an immediate recognition in total comprehensive income of changes in the value of plan assets and obligations for the fiscal year.

Our results provide evidence that full recognition of actuarial gains and losses in equity is more strongly associated with share prices both than full recognition in the income statement, and than the recognized smoothed net pension liability through the corridor approach. These findings are consistent with previous literature, based on European firms (e.g., Street and Glaum, 2010; and Morais, 2011).

Given that the majority of value relevance literature concerning the study of pension accounting is based on U.S. data, it would be worth exploring both the extension of the sample, to a greater number of countries that have adopted the IFRS, and the use of alternative models to explain the relevance of accounting policies to investors.

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8. Appendices

Table 2: **Descriptive statistics: Data per share, in € per share**

	Mean	Median	Maximum	Minimum	Std.Dev.	N
BVE	18.829	14.004	90.503	0.785	19.639	255
BVEbO	17.485	11.948	89.184	-0.730	18.999	255
BVEbP	17.412	11.919	88.813	-0.701	19.002	255
DBO	5.112	2.662	60.628	0.007	7.468	255
FS	1.417	0.708	9.731	-1.242	1.924	255
$Method_E$	0.439	0.000	1.000	0.000	0.497	255
$Method_{P\&L}$	0.055	0.000	1.000	0.000	0.228	255
$Method_C$	0.506	1.000	1.000	0.000	0.501	255
NI	2.060	1.650	13.195	-4.688	2.248	255
O	1.344	0.677	7.767	-1.714	1.746	255
P	28.147	24.670	110.320	0.000	22.966	255
PA	3.696	1.492	50.897	0.000	6.279	255
UA	0.072	0.000	4.478	-2.037	0.532	255

Note: All the variables are deflated by the number of shares outstanding. All accounting data has been hand collected. Share price is from Yahoo Finance. The number of observations with nonzero amounts are given by N.

BVE = book value of equity.

BVEbO = book value of equity before net pensions liability.

BVEbP = book value of equity before funding status (BVE - FS).

DBO = defined benefit obligation.

FS = funding status (DBO - PA)

$Method_E$ = dummy variable for a company using the equity method (1 if equity method, 0 otherwise).

$Method_{P\&L}$ = dummy variable for a company using the P&L method (1 if P&L method, 0 otherwise).

$Method_C$= dummy variable for a company using the corridor method (1 if corridor method, 0 otherwise).

NI = net income.

O = net pensions liabilities.

P = share price at fiscal year-end.

PA = plan assets.

UA = unrecognised pension amounts (FS - O).

Table 3: **Value relevance of pension accounting information**

Variables		Model (1)	Model (2a)	Model (2b)	Model (3)	Model (4)	Model (5)	Model (6)
Const.	Coef.	20.563***	23.240***	23.339***	24.428***	23.690***	22.891***	24.379***
	St. error	0.747	0.956	0.942	0.459	0.719	1.316	2.082
	t-statistic	27.520	24.319	24.787	53.268	32.937	17.400	11.711
	p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BVE/	Coef.	0.177***	0.171***	0.171***	0.071**	0.082**	-0.011	0.071
BVEbO/	St. error	0.058	0.039	0.039	0.030	0.032	0.078	0.082
BVEbP	t-statistic	3.054	4.334	4.334	2.411	2.570	-0.144	0.875
	p-value	0.003	0.000	0.000	0.017	0.011	0.885	0.383
NI	Coef.	2.061***	1.972***	1.972***	2.133***	2.082***	2.454***	2.143***
	St. error	0.177	0.155	0.155	0.080	0.146	0.252	0.270
	t-statistic	11.629	12.738	12.738	26.578	14.299	9.734	7.937
	p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000
$Method_E$	Coef.		-5.413**	-5.512**				
	St. error		2.183	2.186				
	t-statistic		-2.479	-2.522				
	p-value		0.014	0.013				
$Method_{P\&L}$	Coef.		0.099***					
	St. error		0.030					
	t-statistic		3.316					
	p-value		0.001					
$Method_C$	Coef.			-0.099***				
	St. error			0.030				
	t-statistic			-3.316				
	p-value			0.001				
O	Coef.				-1.428***			-1.421***
	St. error				0.435			0.536
	t-statistic				-3.287			-2.652
	p-value				0.001			0.009
FS	Coef.					-0.885**		
	St. error					0.388		
	t-statistic					-2.282		
	p-value					0.024		
DBO	Coef.						-1.612***	
	St. error						0.404	
	t-statistic						-3.987	
	p-value						0.000	
PA	Coef.						2.338***	
	St. error						0.371	
	t-statistic						6.298	
	p-value						0.000	
UA	Coef.							0.264
	St. error							0.928
	t-statistic							0.284
	p-value							0.777
N		255	255	255	255	255	255	255
Adj. R^2		0.883	0.869	0.869	0.960	0.919	0.961	0.960

Note: *: p<0.10; **: p<0.05; ***: p<0.01; all acounting data has been hand collected; share price data is from Yahoo Finance; BVE is the book value of equity, used in models (1), (2a) and (2b); BVEbO is the book value of equity before net pensions liability, and is used in model (3); BVEbP is the book value of equity before funding status used in models (4), (5) and (6); NI is net income; $Method_E$ is a dummy variable for a firm using the equity method for the recognition of actuarial gains and losses (1 if equity method, 0 otherwise); $Method_{P\&L}$ is a dummy variable for a firm using the profit and loss method (1 if P&L method, 0 otherwise); $Method_C$ is a dummy variable for a firm using the corridor method (1 if corridor, 0 otherwise); O is the recognized net pensions liability; FS is the funding status (DBO-PA); DBO is the defined benefit obligation; PA is the fair value of plan assets; UA are the unrecognized pension amounts in the income statement.